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Língua / Language

THE DEVELOPMENT AND IMPLEMENTATION OF A MANUFACTURING STRATEGY IN A BRAZILIAN TIN PLATED CAN MANUFACTURER[1]

Paulo José Lentino C. Prochno &
Henrique Luiz Corrêa
University of São Paulo - Brazil

Abstract

This article describes the manufacturing strategy development and implementation process in a tin-plated can manufacturer located in São Paulo, Brazil. The process did not follow the traditional top-down approach. Rather, it was triggered at the middle-management level. The proposed framework includes some original tools such as a matrix which relates department level objectives with firm level overall competitive objectives. The process results showed that before the reported implementation company resources had been clearly mistakenly allocated due to the lack of a well-defined strategic direction.

Introduction

The number of "case studies" reported in the manufacturing strategy process literature does not match the increased importance of the theme. Moreover, the authors in the field generally prescribe *what* to do but not always delve into details on *how* to do it. It is now broadly accepted that the effective development of a manufacturing strategy is by no means an easy task. There are however some authors whose work have made such development easier. The worksheets developed by Gregory and Platts (1988) are a powerful tool in helping define the priorities for manufacturing; the matrix proposed by Slack, (1991) is both simple to use and effective in giving a clear idea of what needs urgent action in manufacturing. The particular problems of the Brazilian environment and their relation with the companies' strategic planning process are discussed by Corrêa and Gianesi (1993). The case described here aims to contribute with the manufacturing strategy process research by reporting one successful experience of a manufacturing strategy implementation in a Brazilian company, drawing some conclusions that may help other companies which operate under similar conditions.

The company

The work reported here was developed in Brasilata, a tin-plated can manufacturer based in Sao Paulo, Brazil. Brasilata has approximately one thousand employees and 4 plants. In 1993 Brasilata's turnover was around U$ 60 million, ranking fourth in the Brazilian tin plated cans industry. The work presented here was developed in the biggest Brasilata plant in São Paulo, responsible for more than 60 per cent of the company's total sales. This plant has 7 hundred workers and produces 10 different

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types of cans. Most of Brasilata's customers are large chemical companies. The cans are normally made-to-order. The company has a "total quality" program running and intends to achieve the ISO-9002 certification by the end of 1994.

The business environment

The turbulent industrial/economical environment makes long-term planning a difficult task for most companies operating in Brazil. The high levels of inflation (40 per cent per month in February 1994), high interest rates and the political turmoil in which Brazil has found itself in recent years have forced the companies to adopt predominantly "fire-fighting" reactive approaches to management ("6 months is long term planning in Brazil", in the words of a Brazilian manager). Such approaches normally consume substantial amounts of managerial effort and resources which therefore are not used for strategic proactive planning. This paper describes the development and partial implementation of a manufacturing strategy within this context.

The process

The idea of developing a manufacturing strategy for Brasilata was initially proposed by one of the authors in 1993, at the time an industrial engineering trainee working for the company, who had come across manufacturing strategy concepts in courses attended during his production engineering degree. While performing his operational activities, he noticed serious difficulties which the company faced due to the lack of well-defined strategic directions. After giving a presentation to the middle management (the level of his immediate functional superiors) in which he justified his proposal and presented some basic manufacturing strategic concepts, some of the middle-managers started to get involved with the idea. Soon the manufacturing strategy concepts became a current issue at that managerial level. The effective development and implementation of the process itself however still needed top management approval to be put into practice. Despite the proponent's efforts, initially the top management was not convinced of the tangible benefits of the project. Tired as they were of so many and so frequent government-driven radical changes in Brazil, it is not surprising that the top management preferred to adopt a more conservative stance. They also had regarded the proposal as just one more expensive manufacturing fad ("...two years ago, total quality, one year ago, ISO, this year manufacturing strategy; what next?..."). Besides, the company had been having reasonably good results in the past three years - in their view, it was not time to change anything. Some middle-managers did not completely agree with the top-management position, as they had also been subject to the problems of not having clear strategic directions on which to base their operational decisions. The middle-managers then proposed the development of a manufacturing strategy "pilot project" in one area of the company, which would demand little top-management commitment. Based on the (possibly more tangible) results of the pilot, the top-management would then decide whether the project should be extended to the whole company. This proposal was accepted, and the process started.

First steps in the process

As the process would not be conducted by the top-managers themselves, it appeared that it would be necessary to form a group of people interested in the development of the process who should then drive it. This group was formed by the engineer who had initially proposed the idea (he would be the

facilitator of the process), and 5 middle-managers (manufacturing, finance, sales, purchasing and human resources). This group will be referred here as MSG (manufacturing strategy group).
As manufacturing strategy was a new theme in the company, the process started with the application of a questionnaire to the main managers involved with the pilot. The aim was to evaluate their perceptions regarding the role of manufacturing in corporate planning and also their views on the relationships between strategic and operational issues in manufacturing. Based on Hum and Leow's (1992) work, the questionnaire was composed of 18 statements to be analyzed by the respondents and marked by them using a five-point Likert-scale ranging from "totally agree" to "totally disagree". The objective of the questionnaire was twofold. On the one hand, to start having a better understanding of the degree of agreement among the managers regarding manufacturing strategy issues such as the manufacturing importance, role and influence in the company's competitiveness. On the other hand, the intention was also to bring up the issue of manufacturing strategy to people's personal agendas.
It was clear from the questionnaire's answers that, although the strategic importance of manufacturing was generally recognized, the manufacturing role was seen as predominantly "reactive". The managers considered that manufacturing does its job well when it is able to respond well to any sales department's requirements. The "tradeoffs" between different competitive criteria such as quality, cost, flexibility, speed and dependability (Slack, 1991) were also not recognized explicitly by the managers. The "total quality" mentality dominated: "we must be able to be excellent in everything".
After this first gathering of perceptual data, a series of seminars were prepared and run in order to discuss the "why's" behind the discrepancies of the different manager's views reflected in the questionnaires. A second objective of the seminars was to try and uniformize the managers' level of knowledge with regard to manufacturing strategy concepts. After the seminars, it was then time to seek an agreement of the involved managers with regard to manufacturing competitive priorities or, in other words, the manufacturing performance criteria which could contribute the most to the company's competitive power.

Determining the manufacturing priorities: gathering data

In order to determine the most relevant manufacturing competitive criteria, the following activities were performed:
* direct interviews with customers: the sales manager selected 5 customers which were considered to be representative of the 80 customers of the company. These 5 customers were interviewed by a team of members of Brasilata's manufacturing and sales departments, aiming to identify the importance, given by each customer, of the various competitive criteria (cost, quality, speed dependability and flexibility) and the customer's views about Brasilata's performance in the same criteria when compared to their main competitors.
* assessment of Brasilata's managers' views: worksheets originally developed by Gregory and Platts (1988) were used to help determine the most important manufacturing competitive criteria, according to Brasilata's managers. The objective was to evaluate the mangers' perceptions regarding the importance of each criterion and also their perception on the company's performance in these criteria when compared to competitors'.
A summary of the results of the worksheets and the most relevant information from the interviews with the customers was distributed to the members of the MSG. A meeting was then held to discuss the results and to establish a set of agreed priorities for the company. The tool used in this phase was the matrix proposed by Slack (1991). The matrix judges criteria's priorities by putting different criteria's

importance and performance scales together in a matrix. By its very nature, the matrix defines zones which show whether each criterion should demand priority improvement action or not.
The meeting aiming to set the priorities started with the definition of which criteria were relevant to the company. It was decided that five criteria: cost, quality, speed, dependability and flexibility were relevant. During the meeting, the criteria were discussed one by one until they reached an agreement. Not only the current situation was considered, but also the tendencies for the future. After a somewhat painful process of reaching agreement about all criteria, the matrix was constructed. Each criterion was plotted in the most suitable area, and the future tendencies were represented with an arrow. The final matrix is shown in Figure 1.

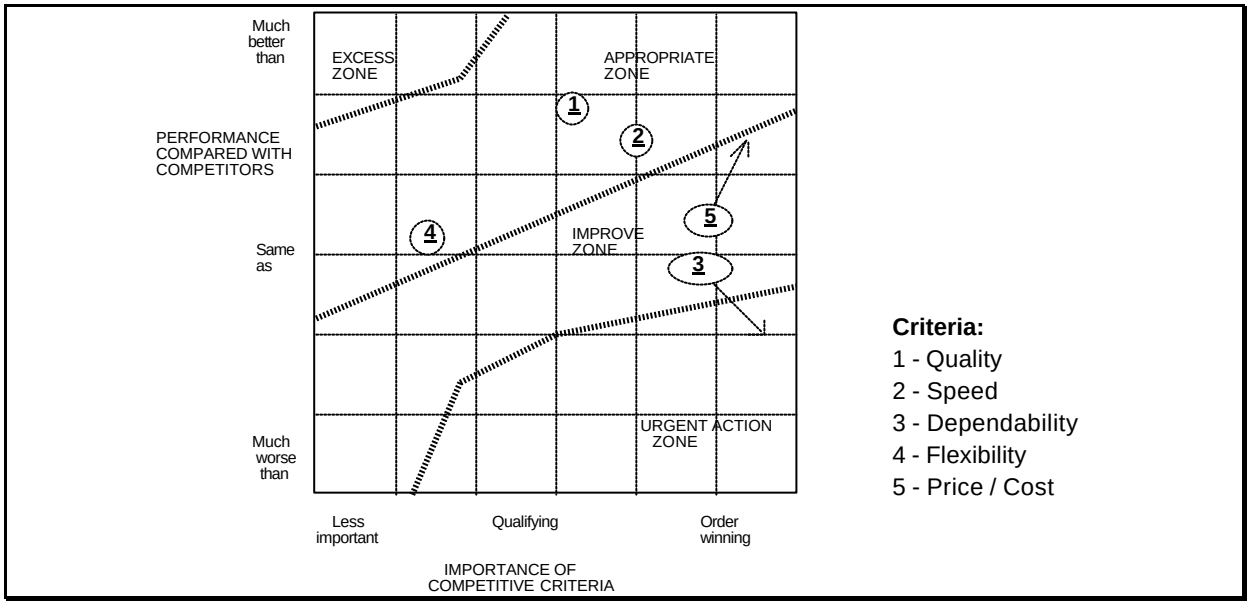

Figure 1: The importance/performance matrix (based on Slack, 1991)

The next step was to define the priority actions, goals, and to determine how the process should be implemented at the operational level. However, the MSG members felt that they were not yet prepared to define goals and set priority actions. "Dependability, for instance, which is our number one priority, is still not objectively measured by the company. How can we know where to get to, if we do not even know where we are?", said the manufacturing manager. Due to this problem, the MSG decided that, before going on with the process at the operational level, it was necessary to study the most important competitive criteria in more depth in order to evaluate the company's current performance.
During one month, studies on the company's determinants of dependability and cost (priorities one and two, according to the importance-performance matrix - see Figure 1) were conducted. Both studies brought up some very important issues. The study on dependability showed, for instance, that the company delivered more than 30 per cent of its orders late. This had not been anticipated by the managers' perceptions. The study on costs evidenced opportunities to work with more cost effective imported materials. This had not been considered until then.

The process at the operational level: the internal customer-supplier approach

The study described in the previous session made it possible to define objective goals for the most important competitive criteria. The process could then go on at the operational level. The MSG

decided to adopt an internal customer-supplier approach: the process would be strongly based on negotiations between departments within the company.
The first step was to make the internal customer-supplier network explicit. It was decided that the same organizational structure should be maintained (given that, by top management decision, a complete re-engineering of the company was not to be considered). Two or three people from each department were selected to become members of the MSG at the operational level. These representatives of each pair customer-supplier were then put together to establish which local criteria would be relevant for their negotiation. The next step was to set the correspondence of these local criteria with the company's global priority competitive criteria. This correspondence aimed to avoid the "local fixes" in each negotiation customer-supplier. The MSG built matrixes of relations for all local criteria. Figure 2 shows an example of the matrix developed for the negotiation between sales and the production planning departments.

Global criteria:	**Quality**	**Speed**	**Dependabil.**	**Flexibility**	**Cost**
Local criteria:					
Exactness	✍✍		✍		✍
Dependability			✍✍✍		✍
Speed		✍✍✍	✍✍	✍✍	✍
Cost					✍✍✍

✍ weak relation ✍✍ medium relation ✍✍✍ strong relation

Figure 2 - Correspondence matrix for the negotiation between sales and production planning.

The importance of each local criterion for each negotiation was obtained from this matrix.
The representatives of each department who had become part of the MSG were introduced to the main concepts of manufacturing strategy through a series of seminars and discussions with the senior members of the MSG. After the concepts were clear and homogeneous among the participants, the internal customers and suppliers started their negotiation process, aiming to determine the priorities and the improvement action plans for their departments. In order to help the negotiations, some worksheets were developed and Slack's (1991) importance/performance matrix was adapted to be used in the customer-supplier discussions.
Two kinds of worksheets were developed: in one of them, the departments could evaluate the performance of its internal suppliers; the other worksheet was for self-assessment. Both of them required the participants to suggest selective improvement plans. The departments were then put together to compare and discuss their answers ("how I evaluate myself x how my customer evaluates me") and to build an agreed matrix.
The matrix was similar to the one shown in Figure 1, with slight yet important differences. The importance of each criterion was established based on the result of the matrix shown in Figure 2. The local criteria with the strongest relation to the company's overall priority competitive criteria were considered to be the most important. The performance was not compared with competitors, but with internal customers' expectations. Figure 3 shows this matrix. The matrix helps determine which criteria require priority improvement action. Based on these priorities, the departments had then to negotiate the action plans to improve the performance in these criteria. A worksheet was developed to help this determination. For each priority criterion, the departments should determine which improvement actions could be done in ten main decision areas: capacity, facilities, technology, vertical integration, labour, quality management, materials flow, new product development, performance measures and

organization. These improvement actions were then presented to the top management for approval. Task-forces were then established aiming at putting the projects into practice.
After the successful pilot project, the process is now being extended to the whole company, with top-management support.

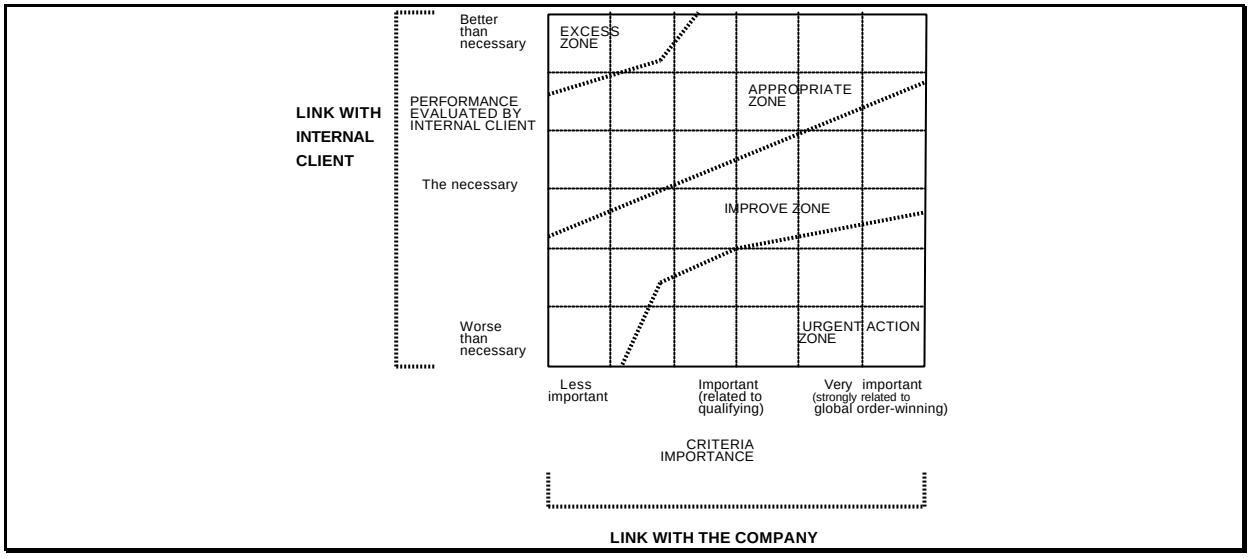

Figure 3 - Importance/performance matrix for internal customer-supplier negotiations

Conclusions

Based on the results of the proposed process, the managers perceived that some resources had previously been mistakenly allocated. As one of the managers said, "...we are investing US$ 2 million in a ISO-9000-based quality program and now we found out that, with a much smaller amount, we could have had more significant results in terms of competitiveness by improving our delivery dependability, which is, in fact, our number one priority!"
The process described here was triggered at the middle-management level, differing from the traditional "top-down" approach. In an environment like Brazil, the top management, facing many "everyday" environmental change-related problems, finds little time to be updated in newly developed techniques. A resulting conservatism makes the development of new ideas normally difficult. In this case, the use of pilot projects triggered by the normally more adventurous middle-management appears to be a good way of introducing new ideas and techniques.

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